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Crisis Stability and Nuclear War

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The following is an overview of a report of the "Crisis Stability and Nuclear War" project, published recently under the auspices of the Academy's Committee on International Security Studies (CISS) and the Cornell University Peace Studies Program. The project was directed by Kurt Gottfried, Professor of Physics at Cornell University, and the associate director was Richard L. Garwin, IBM Thomas J. Watson Research Center and a Vice-Chairman of CISS.

In examining the paths that might lead the superpowers from a crisis to nuclear war, the report integrates historical, military, political, organizational, psychological, and technical perspectives; it was written with the aid of a large number of former policy-makers, senior military officers, scholars, and scientists. The full-length study will be published by Oxford University Press in early 1988.

Perhaps once in a generation, some chain of purposeful or inadvertent events could bring the United States and the Soviet Union within sight of war. As that danger mounted, each would feel compelled to enhance its combat readiness. Modern intelligence would quickly reveal the measures taken by one superpower to the other, and thereby amplify its urge towards yet greater readiness. Such a process, stoked by misperceptions, malevolence, human frailty, and political turmoil, could produce a level of threat of which we have no experience, and ignite armed conflict between the superpowers. While it is unlikely that nuclear weapons would be used at the outset, existing strategies and military postures imply that the risk of escalation to nuclear war would then be high. Those dangers are at the focus of this study.

The role that crisis could play as the precursor to a nuclear catastrophe impels us to analyze the nature of crisis, to identify major weaknesses in our means for coping with crisis, and to suggest steps for strengthening those means. By contrast, the shape and size of the nuclear arsenals have dominated public debate, the decisions of governments and arms control negotiations. If the risk of nuclear war is to be reduced, however, more attention must be paid to the ability of governments to stay in command of events in crisis.

Command authority and responsibility ultimately reside with civilian leaders in both superpowers, their profound political differences notwithstanding. To exercise command, both states have vast diplomatic, military, and intelligence organizations—personnel, machines, and procedures that gather, analyze, and synthesize information; process and transmit decisions; and execute orders. The term for the military portion of this system is *command, control, communications, and intelligence*, or C^3I, but we shall usually refer to it simply as "command." By intent, we often draw no line between its military and civilian components, or its inanimate and human elements.

Crisis is a word whose meaning has been transformed by the advent of nuclear-armed missiles that can destroy a distant opponent's heartland on demand. Today any conflict that had not yet engaged these strategic forces, even one in which tactical nuclear weapons had been used in support of conventional forces, would bear some resemblance to an intense pre-Hiroshima crisis because the transition to "total war" would still hang in the balance. Indeed, deterrence of strategic war is expected to be the supreme objective of both superpowers into the foreseeable future. For that reason this study is largely devoted to crises well below the threshold of intercontinental nuclear war. Nevertheless, the possibility of such a catastrophe would loom as an ominous backdrop over any superpower confrontation.

Chapter 2 sketches that setting: the strategic forces and their combat readiness; the infrastructure of the two command systems; their ability to give warning of attack; and the vulnerability of command to attack. These factors severely constrain the options should deterrence fail. We conclude that:

- A preemptive attack to destroy an opponent's strategic capabilities, or to "decapitate" his government, is not a rational strategy for either side under essentially all circumstances. Nevertheless, one cannot establish that preemption has been abandoned as a possible Soviet option.
- As for retaliation, both sides place considerable reliance on counterattacks that would launch intercontinental ballistic missiles (ICBMs) while the original attack is in progress, despite the many daunting drawbacks that such a strategy entails. The likelihood that, under present circumstances, command would collapse in the wake of a major attack, and that forces would suffer severe attrition, leads to this forbidding conclusion.
- Circumstances would thus arise in which the time available for decisions of unprecedented gravity would be reduced to the vanishing point, and render the prospects for control ephemeral.

Chapter 3 examines the various arenas in which superpower crises may occur. We shall describe the strategies, command structures, and forces of NATO and the Warsaw Pact, paying particular attention to the ladder of alert postures and operations that their forces might mount as a crisis intensifies. Then we turn to the Middle East, with special emphasis on the confrontation between Syria and Israel, and the dangers posed by locally-owned chemical and nuclear weapons. Finally, we consider the oceans and space. Although hostile encounters at sea or in space are isolated from populations, in these global arenas a crisis could swiftly propagate outward from a localized terrestrial origin. We conclude that:

- In Europe, the likelihood that a serious crisis will erupt is small, but once started it is inherently more dangerous than elsewhere.
- In the Middle East, the risk of outbreak is relatively high, but prospects for containment are rather better.
- In peacetime, the superpower navies, carrying many thousands of tactical nuclear weapons, are in continuous contact over widely dispersed regions, and perform reconnaissance in sensitive areas. The distinction between nuclear and conventional forces is especially murky under the sea. Naval activities during crisis could therefore spread the confrontation and spawn escalation.
- Growing antisatellite capabilities could turn space into a medium for exceptionally swift crisis propagation and/or escalation, and into a trigger mechanism for initiation of crisis.

Chapter 4 examines generic features in the flow of events that might carry a superpower crisis to armed conflict and onward to nuclear war. We describe the problems that have faced decision makers in past crises—the assessment of a breaking crisis; domestic and alliance politics; the interpretation of intelligence; and the dilemmas posed by choices between diplomatic and military initiatives.

To avert escalation to armed combat, the superpowers appear to have developed a tacit code of conduct. A breakdown of that code could initiate an interlocking sequence of escalating alerts; possibly stimulate public unrest and panic; and as the crisis grows in complexity, restrict the attention of national leaders to a shrinking set of potentially crucial issues. Such dangers are especially acute in Europe, where a crisis could reach the intensity of imminent war in a matter of days.

Conventional war would, in all likelihood, begin as a conscious act of national policy. But that act could be the final step in an inexorable chain of events created by rising combat readiness and mounting fear of war. Or, in an intense crisis, precipitous overreactions to acts of ambiguous origin or intent could lead to severe lapses of control. In a deeper sense, such paths would have led to conventional war by inadvertence. Once large-scale conventional combat has begun, serious damage to command on both sides would be expected to ensue. Should contingent authority to use tactical nuclear weapons have been granted to compensate for inadequate command endurance, nuclear escalation might then be inadvertently triggered through legitimate actions by local commanders on land or at sea. In Europe, further escalation to theater-range and intercontinental nuclear war would occur if the Soviets adhered to their doctrine of swift escalation (or even preemption) should NATO use (or appear to be readying) its tactical nuclear forces, or if the United States or its allies launched nuclear attacks on targets in the Soviet Union.

That, in a nutshell, is the situation today. It leads to a proposition that should merit support even from those who may disagree with one of our specific conclusions and recommendations:

> The Executive and Congress, the media, and the public must pay more heed to the nonweapons aspects of national security policy. In assessing military capability, or the likelihood of coping with crisis, the ability of command to perform its complex tasks while under stress in a rapidly shifting scene, and even in the face of direct attack, is of paramount importance. Thus command should be at the center of all facets of military planning, including its arms-control dimension. The Executive and

> Congress should develop systematic procedures, in both classified and unclassified formats, for evaluating the impact on crisis stability of major new conventional and nuclear weapons systems, military and civilian organizational changes, alliance commitments, and other national security initiatives.

Chapter 5 summarizes technological trends that are likely to have an impact on crisis stability in the future. It then examines how arms control could moderate the military competition between the superpowers, with emphasis on measures to reduce the threat to command and to restrain developments that would undercut crisis stability.

We shall now summarize our more detailed conclusions and recommendations.

Strategic Command and Forces

- As long as there is rough strategic parity, and assured retaliation against any strategic attack, the size and composition of the strategic forces are not relevant to any conflict below the strategic level. The readying of strategic forces can, however, have a large impact on the course of a crisis.
- Stability at the brink of strategic war would be enhanced if both superpowers were confident that their command systems and forces could ride out an attack. The measures needed to move both nations away from their current hair-trigger postures are clear: strengthening of command systems; and restructuring of strategic forces to make them more secure and less threatening to the adversary's forces, and especially his command system. These goals should be sought by a combination of independent initiatives and negotiated agreements.
- The currently committed command-and-control improvement program addresses the most vital shortcomings in the US strategic posture. It should have the highest priority in the strategic budget to prevent any doubt about the ability of the United States to control and launch nuclear weapons.

- After the program's completion, the system at its peacetime posture should be able to perform its basic functions about as well as the current system could now when fully alerted. The fully alerted upgraded system should endure for many hours longer than the current system, provided that no weapons that can attack high-altitude satellites are deployed. Even with these improvements, however, US command will not have the endurance required to conduct a "controlled" nuclear war unless the Soviet Union were to voluntarily limit its attacks on the US system.
- In an intense crisis, stability would be enhanced by assured capabilities to communicate and to transmit orders. We make a number of suggestions for further improvements of the strategic command system.
- The US-Soviet Hotline should be strengthened so that it could function in the wake of a nuclear exchange. It should be moved to its own high-altitude satellite system, and be backed up by a dispersed and redundant radio network.
- The effort to make strategic command more robust will yield a net gain in performance only if improvements can pull ahead of the growing threat posed by the adversary's offensive forces. We therefore support agreements that would compel deep cuts in strategic forces shaped to reduce the threat to the adversary's forces and command system.
- Long-range nuclear-armed cruise missiles have strategic capabilities. Those not based on strategic bombers pose severe problems for verification and also undercut crisis stability. Agreements concerning them should receive high priority, and both sides should exercise restraint in deploying them.
- Mobile ICBMs enhance stability provided their number can be verified, which will require cooperative measures.

Arms Control and Crisis Stability

- Wars involving minor nuclear powers allied to the superpowers may carry even greater risks to global security than direct confrontations between the superpowers. Therefore the international effort to impede nuclear proliferation should be pursued with the utmost vigor.
- A ban on flight tests of missiles especially capable of threatening command should be sought in negotiations.
- Washington is highly vulnerable to attack with little warning by nearby submarines; Moscow is under a somewhat less severe prompt threat. We therefore support an agreement that would proscribe land- and submarine-based ballistic missiles belonging to one side from a circle of perhaps a 1,500 mile radius drawn around the other's capital.
- In view of the ever-growing importance of military satellites, especially to command, we support a verifiable treaty that would ban the testing at any altitude of antisatellite (ASAT) weapons against space objects.
- To impede the advent of ASATs as a byproduct of research on ballistic missile defense, and to facilitate strategic arms control, we support, first, an expansion of the cancellation clause in the ABM Treaty from six months to at least five years; and second, a renewed commitment to the prohibitions on nonlaboratory testing except as traditionally permitted by the Treaty, or as modified by agreement.

The NATO-Warsaw Pact Confrontation

- NATO's policy of "flexible response" states a willingness to initiate nuclear warfare in the face of impending defeat in a conventional war. Preparations for nuclear use place a heavy burden on NATO command. Large numbers of nuclear warheads must be dispersed from peacetime locations, where they are vulnerable to conventional attack, yet their dispersal could trigger Soviet preemption. Should conventional war have broken out, a command system under attack would have to maintain control over thousands of nuclear weapons while simultaneously readying them for possible use. Decisions to grant authority for nuclear use require, at a minimum, approval by the owner of the weapon (the United States or Great Britain) and the NATO member providing the means of delivery.

- The belief that NATO would quickly succumb to conventional attack ignores significant factors in NATO's favor that are difficult to quantify. But the Pact's superior strategic position, stronger conventional forces, offensive strategy, and high peacetime readiness require NATO to respond promptly to attack warning if it is to mount the conventional defense that is potentially at its disposal. The interaction between the conflicting strategies and postures of the two sides, and a Soviet expectation that it could reach decisions more promptly than NATO, could lead to a precipitous Pact attack, and trigger escalation.
- While agreeing that current NATO policy concerning nuclear weapons is beset by a number of conundrums, the authors hold a spectrum of views regarding what should be done. Some believe that current policy is the only practical alternative; some that NATO should have no weapons of less than theater-range; some that NATO should deploy only nuclear weapons that do not require dispersal before use; and some advocate that the Alliance should adopt a No-First-Use policy following appropriate modifications in forces, training, and planning.

Tactical Command-and-Control and Crisis Management

- Senior military leaders have cautioned against premature or too frequent threat of military power as a solution to diplomatic problems. These concerns should be carefully weighed by civilian leaders before they resort to military alerts or operations, since political signalling by such means can be dangerous and/or ambiguous. In calling alerts, the flexibility of the US alerting

(DEFCON) system should be exploited to maximize the clarity of political intent while minimizing the risk to forces.

- We recommend that a secure videoconferencing capability be acquired for national leaders in Washington, and improved means for secure communications to forces in the field.

- The Navy's nuclear weapons are the only US nuclear weapons not equipped with Permissive Action Links (PALs)—electronic combination locks that can only be opened with codes provided by higher authorities. Many of these weapons are on vessels that would be involved in conventional conflict, but communications to naval units, and especially submarines, can be tenuous at high alert levels or in wartime. Control over these weapons, and assurance that they will be used when authorized, should be made as firm as possible. This is of particular concern for the Tomahawk sea-launched nuclear-armed cruise missiles, which have strategic capabilities even though they are based on surface ships and submarines that would participate in prenuclear combat. Hence the Navy's nuclear weapons should be equipped with PALs, with the Tomahawks having the highest priority. (Paul Tomb dissents from this recommendation; see chapter 4.7.) In view of the unique manner in which ballistic missile submarines operate, their weapons might be exempted from this requirement.

- Lack of institutional memory is endemic in the US government and especially serious in the National Security Council (NSC), where the experience gained in past crises could be critical. It is therefore essential that the databases that have now been installed be maintained, exercised, and improved by future administrations. The NSC should create a professional crisis support staff composed of recently retired senior military officers, diplomats, and intelligence officials that can provide senior policymakers with expert current knowledge on the multitude of mundane details that can be crucial in a crisis.

As the gravity of a crisis increases, past experience becomes progressively less relevant; comprehension of events more problematic; stress and fatigue on men, machines, organizations, and societies more severe; and control correspondingly less firm. Crisis "management," though indispensable, only seeks to cope with crisis. The Cuban Missile Crisis and other successfully "managed" crises have been tame confrontations in that they only involved marginal interactions between the superpowers' armed forces. It would be reckless to assume that those experiences imply that crises are manageable to the degree of confidence required by the existence of nuclear weapons. Prudence unambiguously dictates that avoidance and deterrence of crisis by sound diplomacy combined with a robust though unprovocative defense posture is the first and foremost priority.